



## PATENT ABSTRACTS OF JAPAN

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IWANO TOSHIYUKI****(54) ELECTRICALLY OPERATED POWER STEERING  
DEVICE**

(57) Abstract:

**PURPOSE:** To maintain a proper backlash between gears, even if the environmental temperature changes, by properly determining the thickness of the outer circumferential part of a driven gear in relation to the respective coefficients of linear expansion of a driving gear, a cylindrical part, an outer circumferential part, and a housing.

**CONSTITUTION:** A driven gear 111 is made up of an outer circumferential part 111b made of an elastic body for forming the teeth to be engaged with a driving gear 130b, and a cylindrical part 111a made of metal for supporting the outer circumferential part 111b and to be connected to an output shaft 103. Denoting by  $t$ ,  $K_1$ ,  $K_2$ ,  $hK$ ,  $CD$ , and  $K_4$  respectively the thickness of the outer circumferential part 111b, the coefficient of linear expansion of the driving gear 130b and the cylindrical part 111a, the coefficient of linear expansion of the outer circumferential part 111b, the addendum of the driven gear 111, the center distance between the driving gear 130b and the driven gear 111, and the coefficient of linear expansion of a housing 101, it is determined to satisfy the following expression,

$t=hK+CD.(K_4-K_1)/(K_2-K_1)$  Thus, even if the environmental temperature changes, a proper backlash between the gears 111 and 130b can be maintained.

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